CLAIMS

1. A signal processor comprising:

a signal combiner having a first input, a second input, and an output, wherein the signal combiner is characterized by a combiner transfer function;

a noise estimator having an input coupled to the output of the signal combiner to generate a noise estimate of a signal output from the signal combiner;

a noise gain discriminator, characterized by a discriminator transfer function, coupled to the noise estimator to generate a gain correction factor; and

an error signal accumulator having an input coupled to the noise gain discriminator and an output coupled to the second input of the signal combiner;

wherein the signal processor maintains the output of the signal combiner at a predetermined noise gain set point.

2. The signal processor of Claim 1 further comprising a filter interposed between the noise gain discriminator and error signal accumulator.

3. The signal processor of Claim 2 wherein the filter is a lowpass filter.

4. The signal processor of Claim 1 further comprising a receiver, wherein the first input of the signal combiner is coupled to an output subsequent to a receiver Automatic Gain Control (AGC) stage.

5. The signal processor of Claim 1 wherein the receiver is a wireless communication receiver.

6. The signal processor of Claim 5 wherein the wireless communication receiver is adapted to receive Code Division Multiple Access (CDMA) signals.

7. The signal processor of Claim 1 further comprising a baseband signal processor coupled to the output of the signal combiner, wherein the

baseband signal processor is adapted to demodulate the signal output from the signal combiner.

8. The signal processor of Claim 1 wherein the first input of the signal combiner is adapted to input multiple signals, the output of the signal combiner is adapted to output multiple signals, and the input of the noise estimator is adapted to input multiple signals.

9. The signal processor of Claim 8 wherein the multiple signals are I and Q components of a quadrature signal.

10. The signal processor of Claim 1 wherein the noise estimator comprises:

a Walsh Code Decover stage adapted to despread and Walsh decover a noise estimator input signal;

an accumulator coupled to the Walsh Code Decover stage adapted to accumulate a predetermined number of outputs from the Walsh Code Decover stage;

an energy computation coupled to the accumulator adapted to calculate an energy estimate of the accumulator output; and

an energy accumulator adapted to accumulate a predetermined number of energy estimates.

11. The signal processor of Claim 10 wherein the Walsh Code Decover stage despreads and Walsh decovers the input signal using a Walsh code not assigned to a channel within a communication system.

12. The signal processor of Claim 11 wherein the Walsh code used to despread and decover the input signal has a length equal to a Walsh code length used within the communication system.

13. The signal processor of Claim 12 wherein the Walsh code length is sixteen.

14. The signal processor of Claim 13 wherein the Walsh code is "++++----++++", where binary signals are represented with "+" or "-" values and "+" represents a "0" and "-" represents a "1".

15. The signal processor of Claim 11 wherein the predetermined number of outputs from the Walsh Code Decover stage accumulated by the accumulator is equal to the Walsh code length used in the Walsh Code Decover stage.

16. The signal processor of Claim 11 wherein the Walsh code used to despread and decover the input signal has an equal number of ones and zeros.

17. The signal processor of Claim 16 wherein the Walsh code used to despread and decover the input signal has a length of four.

18. The signal processor of Claim 17 wherein the Walsh code used to despread and decover the input signal is "++--", where binary signals are represented with "+" or "-" values and "+" represents a zero and "-" represents a one.

19. The signal processor of Claim 10 wherein the noise estimator input signal is a quadrature signal having an I signal component and a Q signal component.

20. The signal processor of Claim 19 wherein the Walsh Code Decover stage has an I input, a Q input, an I output, and a Q output.

21. The signal processor of Claim 20 wherein the accumulator independently accumulates I and Q signal outputs from the Walsh Code Decover stage to produce an accumulated I output signal and an accumulated Q output signal.

22. The signal processor of Claim 21 wherein the energy estimate is the sum of the squares of the accumulated I output signal and the accumulated Q output signal.

23. The signal processor of Claim 1 wherein the gain correction factor generated by the noise gain discriminator is the difference between an input to the noise gain discriminator and the predetermined noise gain set point.

24. The signal processor of Claim 1 wherein the gain correction factor generated by the noise gain discriminator is the ratio of the predetermined noise gain set point to an input signal to the noise gain discriminator.

25. A signal processor comprising:

a noise gain controller adapted to scale an input signal such that a constant noise energy level is maintained at the output signal; and

a baseband processor coupled to the output of the noise gain controller adapted to demodulate the output signal.

26. The signal processor of Claim 25 wherein the noise gain controller comprises:

a signal combiner adapted to scale the input signal by a gain correction factor to produce the output signal;

a noise estimator adapted to calculate a noise estimate of the output signal; and

a noise gain estimator adapted to generate the gain correction factor based on the noise estimate and a predetermined noise gain set point.

27. A method of signal processing comprising:

receiving communication signals;

processing the communication signals to produce an output signal having a constant noise energy; and

demodulating the output signals.

28. The method of Claim 27 wherein processing the communication signals comprises:

estimating a noise energy in the communication signals;

calculating a gain correction factor using the noise energy estimate and a predetermined noise gain set point; and

scaling the communication signals by the gain correction factor.

29. The method of Claim 28 wherein estimating the noise energy comprises:

despreading the input signals to produce noise samples;

accumulating a predetermined number of noise samples;

computing an energy estimate of the noise samples; and

accumulating a predetermined number of energy estimates.

30. The method of Claim 28 wherein the input signals are despread using a Walsh code.

31. The method of Claim 30 wherein the Walsh code is a Walsh code not assigned to any communication channel within a communication system generating the input signals.

32. The method of Claim 31 wherein the Walsh code not assigned to any communication channel is of the same length as an assigned Walsh channel within the communication system.

33. The method of Claim 32 wherein the assigned Walsh code length is sixteen.

34. The method of Claim 31 wherein the Walsh code not assigned to any communication channel is "++++--------++++", where binary signals are represented with "+" or "-" values and "+" represents a "0" and "-" represents a "1".

35. The method of Claim 28 wherein the input signals are despread using a predetermined code having an equal number of ones and zeeros.

36. The method of Claim 35 wherein the predetermined code is "++--", where binary signals are represented with "+" or "-" values and "+" represents a zero and "-" represents a one.